FORM PTO-1390
(REV 5-93)

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY DOCKET NO.
P107400-00017

DATE: November 20, 2000

U.S. APPLN. NO.
(IF KNOWN, SEE 37 CFR 1.5)
09/674522

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/JP00/01704	March 21, 2000	March 19, 1999

TITLE OF INVENTION: CHIP TYPE LIGHT EMITTING DEVICE

APPLICANT(S) FOR DO/EO/US: Takehiro FUJII

1. XX This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
(THE BASIC FILING FEE IS ATTACHED)

2. __ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.

3. XX This express request to begin national examination procedures (35 U.S.C. 371(f) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT articles 22 and 39(1).

4. __ A proper demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.

5. XX A copy of the International Application as filed (35 U.S.C. 371(c)(2))
   a. __ is transmitted herewith (required only if not transmitted by the International Bureau).
   b. XX has been transmitted by the International Bureau.
   c. __ is not required, as the application was filed in the United States Receiving Office (RO/US)

6. XX A translation of the International Application into English (35 U.S.C. 371(c)(2)).

7. __ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
   a. __ are transmitted herewith (required only if not transmitted by the International Bureau).
   b. __ have been transmitted by the International Bureau.
   c. __ have not been made; however, the time limit for making such amendments has NOT expired.
   d. __ have not been made and will not be made.

8. __ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).

9. __ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).

10. __ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).
(Amendment Under Article 34)

Items 11. to 16. below concern other document(s) or information included:

11.__ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.

12.__ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.

13. __ A FIRST preliminary amendment.
__ A SECOND or SUBSEQUENT preliminary amendment.

14. __ A substitute specification.

15. __ A change of power of attorney and/or address letter.

16. XX Other items or information:
Check No. 305434
Drawing(s) 3 sheets
International Search Report
Front Page of International Bulletin No. WO00/57491

U.S. APPLN. NO. (IF KNOWN, SEE 37 C.F.R. 1.50) 09/674522	INTERNATIONAL APPLICATION NO. PCT/JP00/01704	ATTORNEY DOCKET NO. P107400-00017 DATE: November 20, 2000

17. XX The following fees are submitted:

Basic National Fee (37 CFR 1.492(a)(1)-(5):

Search Report has been prepared by the EPO or JPO.....$860.00
International preliminary examination fee paid to USPTO (37 CFR 1.482)....$690.00
No international preliminary examination fee paid to USPTO (37 CFR1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2))....$760.00
Neither international preliminary examination fee (37 CFR 1.482) or international search fee (37 CFR 1.445(a)(2)) paid to USPTO.....$1,000.00
International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4) $100.00

	CALCULATIONS	PTO USE ONLY
ENTER APPROPRIATE BASIC FEE AMOUNT =	$ 860.00	
Surcharge of $130.00 for furnishing the oath or declaration later than _ 20 _ 30 months from the earliest claimed priority date (37 CFR 1.492(e)).		

Claims	Number Filed	Number Extra	Rate		
Total Claims	5 - 20 =	0	X $ 18.00		
Independent Claims	1 - 3 =	0	X $ 80.00		
Multiple dependent claim(s) (if applicable)			+ $270.00		
TOTAL OF ABOVE CALCULATIONS =				$ 860.00	
Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28).					
SUBTOTAL =				$ 860.00	
Processing fee of $130.00 for furnishing the English translation later the _ 20 _ 30 months from the earliest claimed priority date (37 CFR 1.492(f)). +					
TOTAL NATIONAL FEE =				$ 860.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). $40.00 per property +					
TOTAL FEES ENCLOSED =				$ 860.00	
				Amount to be refunded	$
				Charged	$

a. XX A check in the amount of $ 860.00 to cover the above fees is enclosed.
b. __ Please charge my Deposit Account No. 01-2300 in the amount of $____ to cover the above fees. A duplicate copy of this sheet is enclosed.
c. XX The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 01-2300 .

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

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S P E C I F I C A T I O N

BE IT KNOWN THAT I, TAKEHIRO FUJII, residing at c/o ROHM CO., LTD., 21, Saiin Mizosaki-cho, Ukyo-ku, Kyoto-shi, Japan, subjects of Japan, have invented certain new and useful improvements in

CHIP TYPE LIGHT EMITTING DEVICE

of which the following is a specification:-

SPECIFICATION

CHIP TYPE LIGHT EMITTING DEVICE

TECHNICAL FIELD

The present invention relates to the ultra small-sized chip type light emitting device using a light emitting diode (LED) chip which can obtain the symmetric luminous intensity distribution in a longitudinal direction on a board and can enhance wire bonding reliability.

BACKGROUND

A small-sized chip type light emitting device with a light emitting diode (LED) chip is known as a conventional light emitting source. Figure 2 is a perspective view showing an example of such chip type light emitting device. Figure 2 illustrates that a pair of electrode patterns 3 and 4 comprised of conductive layer such as copper (Cu) plate layer is formed at the both ends of the board 2. One electrode pattern 3 consists of the surface electrode 3a, side face electrode 3b and back electrode 3c.

The other electrode pattern 4 also consists of the surface electrode 4a, side face electrode 4b and back electrode 4c. The side face electrode 3b and side face electrode 4b of a pair of electrode patterns 3 and 4 form several elliptical through holes in parallel on an original large-sized board on which the board 2 can be obtained by dividing, the internal surface of the elliptical though holes is plated with Cu, etc.,

and the surface electrodes 3a/4a and back electrodes 3c/4c of a pair of electrode patterns 3 and 4 are connected to each other.

The pad 3p is formed on the surface electrode 3a of one electrode pattern 3 and the LED chip 1 is mounted there by die-bonding. One end 5a of the metal wire 5 is connected electrically to the electrode 1a of the LED chip 1 by wire bonding. The other end 5b of the metal wire 5 is connected electrically to the surface electrode 4a of the other electrode pattern 4 by wire bonding. The ultrasonic wave is used in this wire bonding.

The LED chip 1 mounted on the board 2, in which the lower electrode is connected to the surface electrode 3a of one electrode pattern 3 by the wiring bonding, and the metal wire 5 connected electrically to the upper electrode 1a of the LED chip 1 and to the surface electrode 4a of the other electrode pattern 4 by wire bonding are sealed with the translucent resin mold 6. The positions of both ends of this translucent resin mold 6 are located separately from each other at the inside of both ends of the board 2. The chip type light emitting device 20 is formed as mentioned above.

At the handling such as transportation, etc. for automatic mounting to a printed board, etc., the translucent resin mold 6 is picked up by a chuck and the chip type light emitting device 20 is transferred. In the configuration shown in Figure 2, both ends of the translucent resin mold 6 are located at the inside of the surface electrodes 3a and 4a of

a pair of electrode patterns 3 and 4. Therefore, the length of the translucent resin mold 6 is shorter than that of the board 2 of the chip type light emitting device 20, and the contact area for picking up becomes smaller, so if the size of the board 2 becomes 1.6 mm (length) x 0.8 mm (width) or less, the handling cannot be performed smoothly.

Figure 3 and Figure 4 are perspective views showing an example of conventional another chip type light emitting device and the example illustrates that the semi-circular notches 7 and 8 have been formed at both ends of the board 2. Figure 5 is a characteristics diagram showing the distribution of luminous intensity I of the chip type light emitting device of Figure 3. In Figure 3 and Figure 4, the same places as Figure 2 or the points corresponding to Figure 2 are marked with the same symbols. In the example of Figure 3, the side face electrodes 3b and 4b of a pair of electrode patterns 3 and 4 are formed at the internal face of the semi-circular notches 7 and 8 which are formed at both ends of the board 2.

The surface electrodes 3a and 4a of a pair of electrode patterns 3 and 4 extend to a place where those electrodes cover the upper faces of the notches 7 and 8 and both ends of the translucent resin mold 6 and both longitudinal ends of the board 2 are aligned. In the example of Figure 3, the surfaces of the notches 7 and 8 are covered with the surface electrodes 3a and 4a of a pair of electrode patterns 3 and 4. Therefore, the resin does not flow into the notches 7 and 8 when the

translucent resin mold 6 is processed.

In the example of Figure 3, both ends of the translucent resin mold 6 are located at both longitudinal ends of the board 2. Therefore, this example has the advantage of securing the surface area of the translucent resin mold 6 to the extent that the said handling can be performed smoothly even if the chip type light emitting device 30 is downsized.

However, assuming that both ends of the translucent resin mold 6 are located at both longitudinal ends of the board 2 as shown in Figure 3, if the board size becomes small, e.g., 1.6 mm x 0.8 mm, the LED chip cannot be centered on the board 2 as shown in Figure 4.

In the example of chip type light emitting device 40 of Figure 4, the LED chip 1 is mounted at a position shifted to a longitudinal center of the board 2 and the other end 5b of the metal wire 5 is bonded at a position close to the end of the board 2. That is, the other end 5b of the metal wire 5 is bonded at a position where the surface electrode 4b of the electrode pattern 4 covers the notch 8.

As described above, a position to bond the other end 5b of the metal wire is located on the surface electrode 4b which covers the upper face of the notch 8. Therefore, the notch 8 is located under a place where wire bonding is performed and the mechanical strength of horn support deteriorates at wire bonding with the ultrasonic wave.

Therefore, enough pressure cannot be applied to the horn which propagates the ultrasonic wave at the ultrasonic wave

processing and the surface electrodes 4b of the electrode pattern 5 and the other end 5b of the metal wire cannot be bonded completely to each other by the ultrasonic wave. To enhance the reliability of bonding with the ultrasonic wave, the configuration illustrated in Figure 3 is adopted. However, in Figure 3, the LED chip 1 is mounted at the off-centered position on the board 2.

In the example of Figure 3, the LED chip 1 cannot be centered on the board 2. As a result, the LED chip 1 is located at the decentered position on the translucent resin mold 6 also. So, as shown in the luminous intensity characteristics diagram of Figure 5, there was a problem that the symmetric luminous intensity distribution cannot be obtained in a longitudinal direction of the board.

DISCLOSURE OF INVENTION

The present invention was made taking such problem into consideration and the purpose of the present invention is to offer the ultra small-sized chip type light emitting device which can obtain the symmetric luminous intensity distribution in a longitudinal direction of the board even if the board is downsized and which can enhance wire bonding reliability.

The chip type light emitting device offered by the present invention comprising: a board of nearly rectangular shape in a plane view; first and second electrode patterns formed at both ends of a surface of the board; a light emitting diode (LED) chip mounted on the first electrode pattern; a

metal wire connected to the LED chip and the second electrode pattern by wire bonding; and a translucent resin mold which seals the LED chip and the metal wire;

wherein one notch is formed at one end of the board at the first electrode pattern side and two notches are formed at both sides of the other end of the board at the second electrode pattern side, and the positions at both ends of the translucent resin mold are arranged to the positions at both ends in a longitudinal direction of the board.

The preferred embodiment of the present invention features that the LED is almost centered on the board.

The preferred embodiment of the present invention features that the board size is 1.6 mm x 0.8 mm or less.

The preferred embodiment of the present invention features that the metal wire is connected to the LED chip and the surface electrode of the second electrode pattern, which is located between the two notches formed at both sides of the other end of the board at the second electrode pattern side, by wire bonding.

The preferred embodiment of the present invention features that one notch formed at the one end of the board at the first electrode pattern side is semi-cylindrical and the two notches formed at both sides of the other end of the board at the second electrode pattern side are quarter-cylindrical.

According to the present invention, two notches are formed at both side of one end of the board. Therefore, even

if a wire bonding position is close to the end of the board, wire bonding of the second electrode pattern and metal wire is made stably on the bard between such two notches and the LED chip can be centered on the board. Therefore, the ideal symmetric luminous intensity characteristics can be obtained in a longitudinal direction of the board.

One notch is formed at one end of the board and two notches are formed at the other end. So, the polarity of the LED chip can be checked easily. If the translucent resin mold is milk white, the LED chip embedded in the translucent resin mold is illegible. However, one notch is formed at one end of the board and two notches are formed at the other end. Therefore, it is obvious that the electrode structure is asymmetric and the polarity can be checked easily because of the appearance of chip type light emitting device.

Moreover, the positions of both ends of translucent resin mold are arranged to the positions of both ends in a longitudinal direction of the board. Therefore, the contact area for picking up can be increased and handling process can be performed smoothly to ultra small-sized chip type light emitting device.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view which illustrates the chip type light emitting device with the embodiment of the present invention;

Figure 2 is a perspective view which summarizes a

conventional chip type light emitting device;

Figure 3 is a perspective view which summarizes a conventional chip type light emitting device;

Figure 4 is a perspective view which summarizes a conventional chip type light emitting device;

Figure 5 is a characteristics diagram which shows the luminous intensity in a longitudinal direction of a conventional chip type light emitting device; and

Figure 6 is a characteristics diagram which shows the luminous intensity in a longitudinal direction of the chip type light emitting device with the embodiment of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Now, a description will be given in more detail of preferred embodiments of the present invention with reference to the accompanying drawings. Figure 1 is a perspective view which illustrates the chip type light emitting device 10 with the embodiment of the present invention.

A pair of electrode patterns 13 and 14 comprised of conductive layer such as copper (Cu) plate layer is formed at the both ends of the board 12. One electrode pattern 13 consists of the surface electrode 13a, side face electrode 13b and back electrode 13c.

The other electrode pattern 14 also consists of the surface electrode 14a, side face electrode 14b and back electrode 14c. The side face electrode 13b and side face

electrode 14b of a pair of electrode patterns 13 and 14 form several elliptical through holes in parallel on an original large-sized board on which the board 2 can be obtained by dividing, the internal surface of the elliptical though holes is plated with Cu, etc., and the surface electrodes 13a/14a and back electrodes 13c/14c of a pair of electrode patterns 13 and 14 are connected to each other.

The pad 13p is formed on the surface of the board 12 to be electrically connected with the surface electrode 13a of one electrode pattern 13 and the LED chip 11 is mounted there by die-bonding. One end 15a of the metal wire 15 is connected electrically with the electrode 11a of the LED chip 11 by wire bonding. The other end 15b of the metal wire 15 is connected electrically with the surface electrode 14a of the other electrode pattern 14 by wire bonding. The ultrasonic wave is used in this wire bonding.

The LED chip 11 mounted on the board 12, in which the lower electrode is connected to the surface electrode 13a of one electrode pattern 13 by the die-bonding, and the metal wire 15 connected electrically with the upper electrode 11a of the LED chip 11 and with the surface electrode 14a of the other electrode pattern 14 by wire bonding are sealed with the translucent resin mold 16.

In Figure 1, the shape of the board 12 is nearly rectangular shape in a plan view (e.g., 10 mm in length x 0.5 mm in width) and the first electrode pattern 13 and the second electrode pattern 14 are formed at both ends in a longitudinal

direction of the surface of the board 12. The semi-cylindrical notch 17, which penetrates perpendicularly, is formed at the center of one end of the board 2. Moreover, the notches 18a and 18b, which penetrate perpendicularly, at both sides in a crosswise direction (width direction), are formed at the other end of the board 12.

The surface electrodes 13a and 14a of the first and second electrodes 13 and 14 project like eaves on the notch 17 at one side and on the two notches 18a and 18b at the other side. The side electrodes 13b and 14b, which are connected to the surface electrodes 13a and 14a, are formed and exposed on the internal side walls of such notch 17 and such notches 18a and 18b. Moreover, the back electrodes 13c and 14c are formed at both ends of the back of the board 12.

The two notches 18a and 18b can be formed at both side at one end of the board 12 by selecting the position to form the notches when several chip type light emitting devices are manufactured from one large-sized board equipped with several LED chips and by setting the positions to cut the large-sized board longitudinally and transversely to form individual chip type light emitting devices to the positions of the notches 18a and 18b shown in Figure 1.

The LED chip 11, of which lower face electrode is connected to the surface electrode 13a, is centered on the surface of the board 2 and the upper face electrode 11a of the LED chip 1 is connected to the surface electrode 14a at one end 15a of the metal wire 15 such as gold (Au) by wire

bonding. The metal wire 15 is arranged from the center of the board 12 to the other end of the board 2, which is the center at the width direction, that is, toward the position of the surface electrode 14a between the notches 18a and 18b. The other end 15b of the metal wire is connected to the surface electrode 14a at the end of the board 12.

The surface electrodes 13a and 14a of the first electrode pattern 13 and the second electrode pattern 14 cover the notch 17 and the notches 18a and 18b, and the ends of the first and second electrode patterns 13 and 14 are arranged at both ends of the board 12. Moreover, the positions of both ends of translucent resin mold 16 are arranged to the positions of both ends of the board 12.

In the configuration of Figure 1, a part of the board 12 is located between the two notches 18a and 18b. Therefore, a connecting position of the other end 15b of the metal wire 5 and the surface electrode 14b of the electrode pattern 4 is formed on the board 2. A lower part of horn of ultrasonic wave device is supported by this board. So, enough pressure can be applied, and the other end 15b of the metal wire 15 and the surface electrode 14b of the electrode pattern 14 can be bonded completely by the ultrasonic wave. Therefore, the wire bonding reliability can be enhanced.

Figure 6 is a characteristics diagram which shows the distribution of luminous intensity I of the chip type light emitting device of Figure 1. For the chip type light emitting device of Figure 1, as shown in Figure 6, the ideal symmetric

luminous intensity characteristics can be obtained in a longitudinal direction of the board 12 by centering the LED chip 1 on the board 12. Also, wire bonding can be made stably by extending the other end 15b of the metal wire 15 to a position close to the end of the board 2.

Furthermore the one notch 17 is formed at one end of the board 12 and the two notches 18a and 18b are formed at the other end. So, the polarity of the LED chip 11 can be checked easily according to the number of notches. If the translucent resin mold 16 is milk white, the LED chip 11 embedded in the translucent resin mold 16 is illegible. However, even in this case, the polarity can be checked easily based on the appearance of chip type light emitting device 10.

In ultra small-sized chip type light emitting device of which size is 10 mm in length x 0.5 mm in width, it is difficult to show the polarity in resist. It is very useful to check the polarity according to the number of formed notches as described above.

Moreover, the positions of both ends of the translucent resin mold 16 are arranged to the positions of longitudinal ends of the board 12

Moreover, the positions of both ends of translucent resin mold 16 are arranged to the positions of both ends in a longitudinal direction of the board 12. Therefore, the contact area for picking up can be increased and handling process can be performed smoothly to small-sized chip type light emitting device.

What is claimed is:

1. A chip type light emitting device comprising:

a board of nearly rectangular shape in a plane view;

first and second electrode patterns formed at both ends of a surface of said board;

a light emitting diode (LED) chip mounted on said first electrode pattern;

a metal wire connected to said LED chip and said second electrode pattern by wire bonding; and

a translucent resin mold which seals said LED chip and said metal wire;

wherein one notch is formed at one end of said board at said first electrode pattern side and two notches are formed at both sides of the other end of said board at said second electrode pattern side, and the positions at both ends of said translucent resin mold are arranged to the positions at both ends in a longitudinal direction of said board.

2. The chip type light emitting device of claim 1, wherein said LED chip is almost centered on said board.

3. The chip type light emitting device of claim 1, wherein said board size is 1.6 mm x 0.8 mm or less.

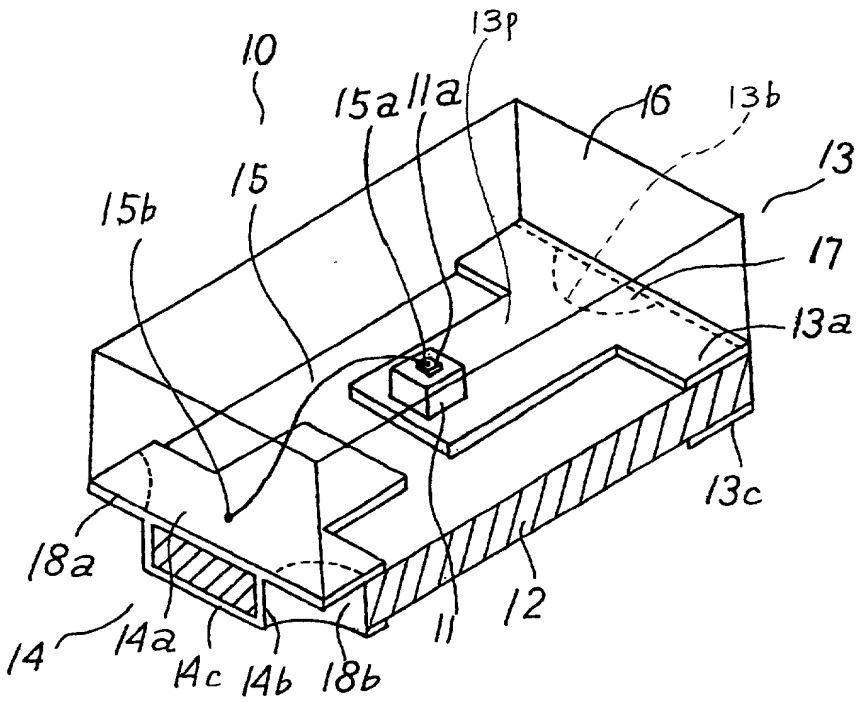
4. The chip type light emitting device of claim 1, wherein said metal wire is connected to said LED chip and the surface of said second electrode pattern, which is located between said two notches formed at both sides of the other end of said board at said second electrode pattern side, by wire bonding.

5. The chip type light emitting device of claim 1, wherein said one notch formed at said one end of said board at said first electrode pattern side is semi-cylindrical and said two notches formed at both sides of the other end of said board at said second electrode pattern side are quarter-cylindrical.

ABSTRACT

The notch 17 is formed at one end of the board (12) and the two notches (18a and 18b) are formed at both sides of the other end. The first and second electrode patterns (13 and 14) covering, which cover the notches formed at both ends, are formed on the board surface, the light emitting diode (LED) chip (11) is connected to the first electrode pattern (13) and the electrode (11a) of the LED chip (11) and the surface electrode (14a) of the second electrode pattern (14) are bonded to each other with the metal wire (15). The LED chip (10) and the metal wire (15) are embedded with the translucent resin mold 16. Wire bonding on the surface electrode (14a) of the second electrode pattern (14) with the other end (15b) of the metal wire is made on the board 12 located between the two notches (18a and 18b). As a result, wire bonding can be made stably. Moreover, the polarity of the LED chip can be checked easily based on the appearance. Furthermore, handling jprocess can be performed smoothly.

FIG. 1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11a
16
13b
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17
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13c
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18b
11
12

FIG. 2

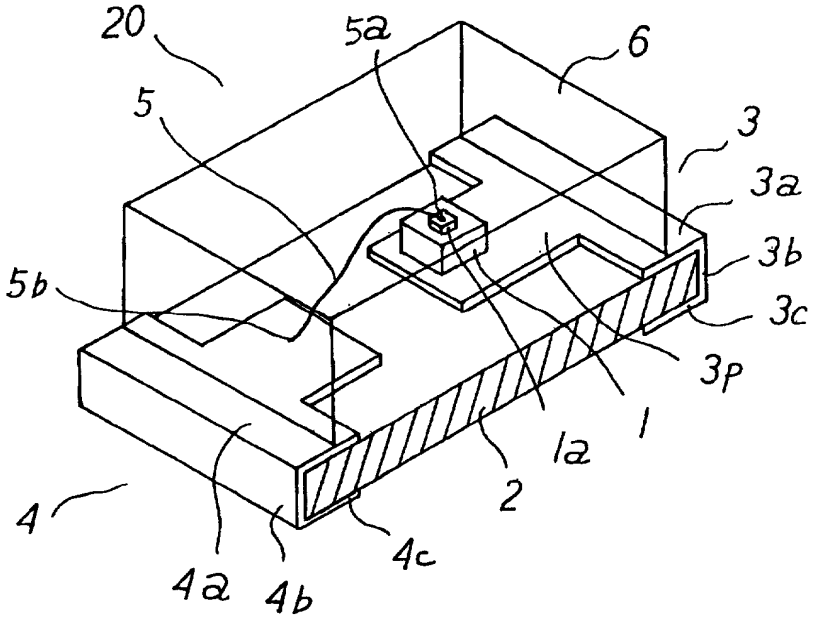
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FIG. 3

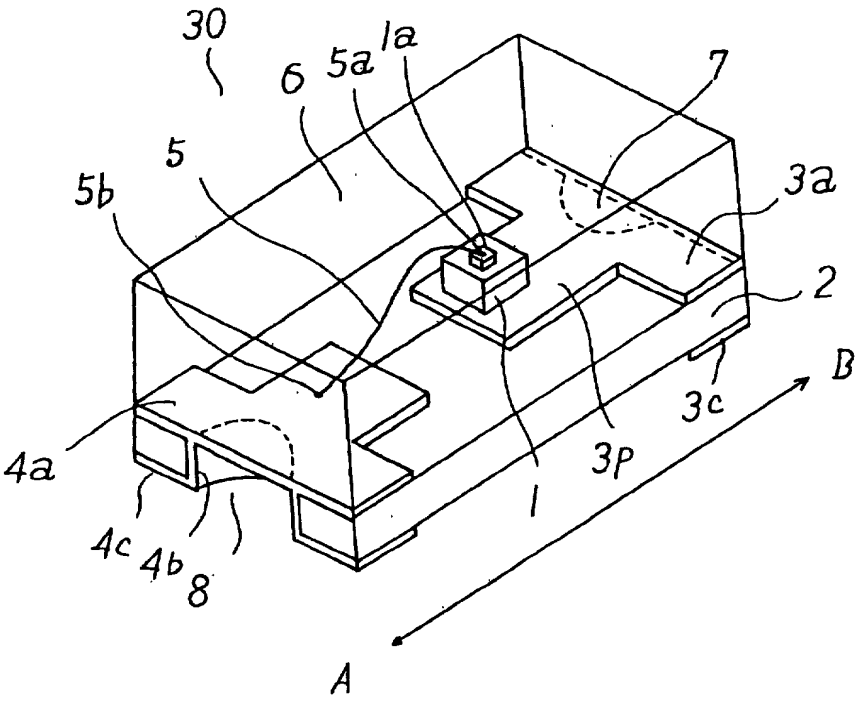
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FIG. 4

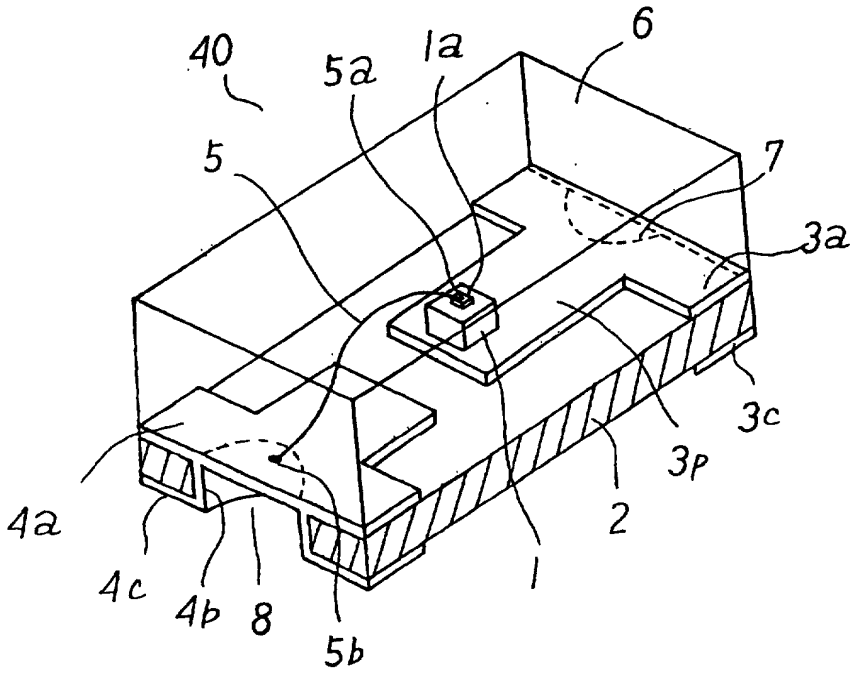
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FIG. 5

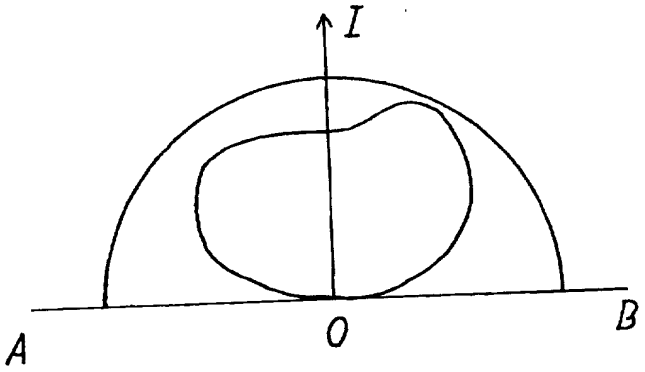
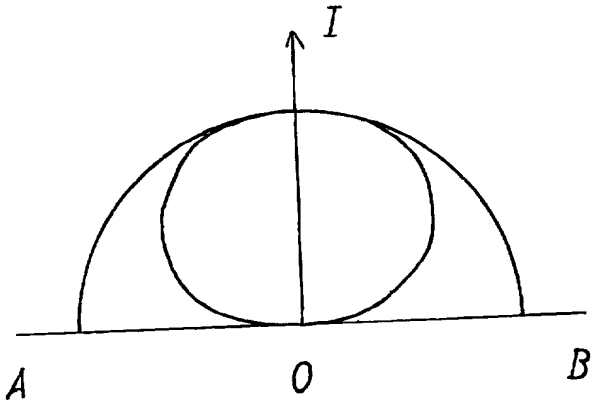


FIG. 6



02 JAN 2001

Declaration and Power of Attorney For Patent Application

09/674522

特許出願宣言書及び委任状

Japanese Language Declaration

日本語宣言書

下記の氏名の発明者として、私は以下の通り宣言します。

As a below named inventor, I hereby declare that:

私の住所、私書箱、国籍は下記の私の氏名の後に記載された通りです。

My residence, post office address and citizenship are as stated next to my name.

下記の名称の発明に関して請求範囲に記載され、特許出願している発明内容について、私が最初かつ唯一の発明者（下記の氏名が一つの場合）もしくは最初かつ共同発明者であると（下記の名称が複数の場合）信じています。

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

CHIP TYPE LIGHT EMITTING DEVICE

上記発明の明細書（下記の欄でx印がついていない場合は、本書に添付）は、

the specification of which is attached hereto unless the following box is checked:

☐ __月__日に提出され、米国出願番号または特許協定条約国際出願番号を_____とし、
（該当する場合）_____ に訂正されました。

☐ was filed on March 21, 2000
as United States Application Number or
PCT International Application Number
PCT/JP00/01704 and was amended on
_____ (if applicable).
and was filed on November 20, 2000
as U.S.A. No. 09/674,522

私は、特許請求範囲を含む上記訂正後の明細書を検討し、内容を理解していることをここに表明します。

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

私は、連邦規則法典第３７編第１条５６項に定義されるとおり、特許資格の有無について重要な情報を開示する義務があることを認めます。

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

Japanese Language Declaration
(日本語宣言書)

私は、米国法典第３５編１１９条(a)-(d)項又は３６５条(b)項に基き下記の、米国以外の国の少なくとも一ヵ国を指定している特許協力条約３６５(a)項に基ずく国際出願、又は外国での特許出願もしくは発明者証の出願についての外国優先権をここに主張するとともに、優先権を主張している、本出願の前に出願された特許または発明者証の外国出願を以下に、枠内をマークすることで、示しています。

I hereby claim foreign priority under Title 35, United States Code, Section 119 (a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)
外国での先行出願

(Number) (番号)	(Country) (国名)	(Day/Month/Year Filed) (出願年月日)	Priority Not Claimed 優先権主張なし
075508/1999	Japan	19/3/1999	☐
			☐

私は、第３５編米国法典１１９条(e)項に基いて下記の米国特許出願規定に記載された権利をここに主張いたします。

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below.

(Application No.) (出願番号)	(Filing Date) (出願日)	(Application No.) (出願番号)	(Filing Date) (出願日)

私は、下記の米国法典第３５編１２０条に基いて下記の米国特許出願に記載された権利、又は米国を指定している特許協力条約３６５条(c)に基ずく権利をここに主張します。また、本出願の各請求範囲の内容が米国法典第３５編１１２条第１項又は特許協力条約で規定された方法で先行する米国特許出願に開示されていない限り、その先行米国出願書提出日以降で本出願書の日本国内または特許協力条約国際提出日までの期間中に入手された、連邦規則法典第３７編１条５６項で定義された特許資格の有無に関する重要な情報について開示義務があることを認識しています。

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of application.

(Application No.) (出願番号)	(Filing Date) (出願日)	(Status: Patented, Pending, Abandoned) (現況：特許許可済、係属中、放棄済)

私は、私自身の知識に基ずいて本宣言書中で私が行なう表明が真実であり、かつ私の入手した情報と私の信じるところに基ずく表明が全て真実であると信じていること、さらに故意になされた虚偽の表明及びそれと同等の行為は米国法典第１８編第１００１条に基ずき、罰金または拘禁、もしくはその両方により処罰されること、そしてそのような故意による虚偽の声明を行なえば、出願した、又は既に許可された特許の有効性が失われることを認識し、よってここに上記のごとく宣誓を致します。

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Japanese Language Declaration
(日本語宣言書)

委任状： 私は下記の発明者として、本出願に関する一切の手続きを米特許商標局に対して遂行する弁理士または代理人として、下記の者を指名いたします。（弁護士、または代理人の氏名及び登録番号を明記のこと）

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith *(list name and registration number)*

書類送付先

B

And I hereby appoint as principal attorneys: David T. Nikaido, Reg. No. 22,663; Charles M. Marmelstein, Reg. No. 25,895; George E. Oram, Jr., Reg. No. 27,931; Robert B. Murray, Reg. No. 22,980; Martin S. Postman, Reg. No. 18,570; E. Marcie Emas, Reg. No. 32,131; Douglas H. Goldhush, Reg. No. 33,125; Kevin C. Brown, Reg. No. 32,402; Monica Chin Kitts, Reg. No. 36,105; Richard J. Berman, Reg. No. 39,107; King L. Wong, Reg. No. 37,500; Karen K. Costantino, Reg. No. 35,107; and James A. Poulos, III, Reg. No. 31,714.

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発明者の署名 日付	Inventor's signature Takehiro Fujii Date 20/12/2000
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国籍	Citizenship Japan JPX
私書箱	Post Office Address Same as Residence
第二共同発明者名	Full name of second joint inventor, if any
第二共同発明者の署名 日付	Second inventor's signature Date
住所	Residence
国籍	Citizenship
私書箱	Post Office Address

（第三以降の共同発明者についても同様に記載し、署名をすること）

(Supply similar information and signature for third and subsequent joint inventors.)

第三共同発明者名		Full name of third joint inventor, if any	
第三共同発明者の署名	日付	Third inventor's signature	Date
住所		Residence	
国籍		Citizenship	
私書箱		Post Office Address	
第四共同発明者名		Full name of fourth joint inventor, if any	
第四共同発明者の署名	日付	Fourth inventor's signature	Date
住所		Residence	
国籍		Citizenship	
私書箱		Post Office Address	
第五共同発明者名		Full name of fifth joint inventor, if any	
第五共同発明者の署名	日付	Fifth inventor's signature	Date
住所		Residence	
国籍		Citizenship	
私書箱		Post Office Address	
第六共同発明者名		Full name of sixth joint inventor, if any	
第六共同発明者の署名	日付	Sixth inventor's signature	Date
住所		Residence	
国籍		Citizenship	
私書箱		Post Office Address	

第七共同発明者名		Full name of seventh joint inventor, if any	
第七共同発明者の署名	日付	Seventh inventor's signature	Date
住所		Residence	
国籍		Citizenship	
私書箱		Post Office Address	
第八共同発明者名		Full name of eighth joint inventor, if any	
第八共同発明者の署名	日付	Eighth inventor's signature	Date
住所		Residence	
国籍		Citizenship	
私書箱		Post Office Address	
第九共同発明者名		Full name of ninth joint inventor, if any	
第九共同発明者の署名	日付	Ninth inventor's signature	Date
住所		Residence	
国籍		Citizenship	
私書箱		Post Office Address	
第十共同発明者名		Full name of tenth joint inventor, if any	
第十共同発明者の署名	日付	Tenth inventor's signature	Date
住所		Residence	
国籍		Citizenship	
私書箱		Post Office Address	